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Graduate Management Project: Business Case Analysis

Identifying Concerns of the Continuum of Care for United States Air Force Cadets with the
Implementation of Base Realignment and Closure Initiatives at the Air Force Academy Hospital

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Abstract

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Business Case Analysis

Identifying Concerns of the Continuum of Care for United States Air Force Cadets with the Implementation of Base Realignment and Closure Initiatives at the Air Force Academy Hospital

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Disclaimer

The views expressed in this article are those of the author and do not reflect official policy or position of Baylor University, the Department of the Navy, the Department of the Army, the Department of the Air Force, the Department of Defense, or the U.S. Government.

A. Introduction

This business case analysis (BCA) projects the likely financial results and other business consequences to the United States Air Force Academy (USAFA) Hospital, 10th Medical Group (MDG), associated with the impending loss of inpatient services as directed under the 2005 Base Realignment and Closure Commission (BRAC) initiatives. Authorized under the BRAC Act of 1990, Public Law 101-510, 10 U.S.C 2687, these initiatives are public law. This BCA will focus on the continuum of care and the special needs of Air Force (AF) Academy cadets (BRAC, 2005).

Presently, the USAFA hospital has a 16-bed medical/surgical inpatient unit (MSU), a three-bed intensive care unit (ICU), as well as a Level III Emergency Department (ED) (D. Beatty, personal communication, September 8, 2006). These clinical areas meet the majority of medical needs for cadets, active duty, dependents, and retirees. Total beneficiary population is approximately 31,333 with 4,500 of those in the cadet category (A. Berg, personal communication, September 11, 2006). Currently the 10 MDG is able to meet beneficiary needs with a host of specialty care services to include a cadet clinic, flight medicine, orthopedics, ophthalmology, cardiology, behavioral health, neurology (to include a sleep lab), dermatology, chiropractic, physical therapy, gastrointestinal (GI), pediatrics, allergy/immunizations, oral surgery, and internal medicine. However, with the 2005 BRAC implementation, the 10 MDG will lose its inpatient mission, the ED will evolve into an Urgent Care Clinic (UCC), and the surgical unit will evolve into an ambulatory surgical unit (ASU).

This will affect the scope of care currently available to the entire beneficiary population. One of the main BRAC concerns of the 10 MDG is cadet management of care. The issue is

defining a scope of care for cadets in the ambulatory care setting, taking into account that the care setting for cadets may differ from the care setting for other beneficiaries.

The mission of the 10th Air Base Wing (ABW) is to educate, train, and inspire men and women to become officers of character, motivated to lead the USAF in service to our nation. The vision is to be the AF premier institution for developing leaders of character (About the Academy, 2006). As evidenced by these statements, the entire institution exists to educate future leaders of the AF. This includes ensuring their health and well-being. The cadets are the mission.

Potential cadets must meet strict admission requirements. Academically, 83% of those admitted are in the top quarter of their graduating class. Recent entering classes average in the top 3% of their graduating class. A minimum grade point average (GPA) of a 2.0 is required and one grade letter below a C automatically disqualifies an individual. The mean score on the Standard Aptitude Test (SAT) is 1295, while the mean score of the American College Test (ACT) is 118. Approximately 11% of those admitted to the Academy were first in their class. Academics encompass 60% of the total admission score (Admissions, 2006).

Extra-curricular activities and input from the admission panel make up the other 40% of the admission score. Each candidate must have participated in at least one varsity level sport and one non-athletic activity. Quality of leadership positions is weighed heavier than quantity of activities. The admission panel evaluates fitness test scores, admission liaison officer (ALO) interview scores, and writing samples. In addition to all of these requirements, the candidate must also obtain either a congressional, vice-president or presidential appointment (Admissions, 2006).

Potential cadets are instructed to learn the honor code prior to admission to the Academy. The code states, "we will not lie, steal or cheat, nor tolerate among us anyone who does" (Admissions, 2006). Even before entering, the Academy there is a perception of high moral character. The public expects the same of the active duty members stationed here as well.

The AF Academy has high visibility both politically and in the media. This political weight is felt throughout the 10 ABW and the 10 MDG. Parents have high expectations for the treatment of their sons and daughters and any complaint has visibility at least at the congressional level if not higher. Parental expectation is that cadets are not treated the same as active duty, but treated better.

The media likes to focus attention on any of the service academies and highlight negative issues. These issues may happen at other educational institutions throughout the US; however, the service academies are expected, by the public, to have and uphold higher standards. This is perpetuated by the respective honor codes. The political weight of the media is evidenced by the recent AF Academy scandals in regarding religion (Wheeler, 2005) and sexual harassment issues (McIntyre, 2003). When something is reported in the media it quickly becomes a hot topic and actions are immediately taken to rectify the situation (N. Waite, personal communication, September 1, 2006).

The 10 MDG perpetuates the cadet focus in a number of ways. There is a medical and optometry clinic specifically for the cadets as well as a state of the art orthopedic and sports medicine departments. The dental clinic is located in the cadet area, despite servicing the entire active duty population. Another example is the cadet medical clinic, which moves their entire operation out in the field for two weeks while the cadets complete basic training requirements. The entire 10 MDG medically supports all cadet functions to include all sport home games,

parents' weekend activities, cadet in-processing, graduation, and a number of other cadet activities. This support is in addition to other primary duties (N. Waite, personal communication, September 1, 2006).

Understandably, the issue of caring for the cadets in the BRAC environment has become a main focal point for the 10 MDG. There are many options that could be considered; however, this BCA will focus on four options. These options are 1) utilization of Fort (FT) Carson, 2) utilization of FT Carson with expansion of cadet ambulatory care services, 3) utilization of network care with admitting privileges for any physician treating a cadet, or 4) utilization of network care with admitting privileges for cadet physicians and expansion of cadet ambulatory care services.

The fiscal year (FY) 08-13 Medical Planning and Programming Guidance (MPPG) states that the AF Academy will realign the inpatient mission at FT Carson (MPPG, n.d.). The MPPG (n.d.) further dictates that each military treatment facility (MTF) should conduct BCAs to fully understand the financial impacts to their facility and the major command (MAJCOM). In the case of the AF Academy, they are also their own MAJCOM. Options chosen were based on BRAC, AF, and executive guidance. BRAC specifically states that the AF Academy will move the inpatient mission to FT Carson. However, in the same posting it also states that the Academy will rely on the civilian and military medical network for inpatient services (BRAC, 2005). Despite the guidance leaning towards FT Carson, network care will also be examined as an option only for cadets. The reasons for this are the special needs of the cadet population, executive guidance, the addition of a new civilian hospital, which will be located closer than FT Carson, and the anticipated surge of over 9,000 soldiers to FT Carson (J. Paul, personal

communication, September 7, 2006). The goal of the 10 MDG is to meet BRAC guidelines as well as examine options that may have added benefits for the cadet population.

Financially, there is no direct cost to the 10 MDG for either the utilization of network care or FT Carson. After congress appropriates the budget for health affairs, a certain amount is taken directly off the top and allocated to TRICARE. The rest of the money is then distributed throughout the Army, Navy and Air Force (R. Peltzer, personal communication, September 27, 2006). When TRICARE receives a network care bill, they verify the appropriateness of the admission with the local MTF. If the claim is approved, TRICARE pays the bill from their funds. If the claim is denied, the provider will directly bill the patient (N. Kauhaahaa, personal communication, September 28, 2006). While the 10 MDG does not receive a direct bill, the more network care used equates to a larger budget each year for TRICARE and a smaller budget that is then shared across the services.

Starting in FY 07, MTFs are to be reimbursed \$60 per relative value unit (RVU) seen in that facility (S. Suckow, personal communication, September 27, 2006). FT Carson would be the main recipient of those monies. However, workload recaptured with the expansion of cadet ambulatory services can be coded for RVUs (A. Berg, personal communication, April 18, 2007). In addition, the Academy, as well as the other Services, profit by decreasing the total network care budget of TRICARE.

All options have a transportation element. The issue surfaces when a cadet requires an inpatient admission. The cadet must be transported in a manner consistent with their diagnosis and condition while keeping in mind the most cost-effective manner. Cadets are not required to have vehicles, so many are dependent on the base, their cadet chain of command, or friends for

transportation. The 10 MDG also has a responsibility to ensure that each cadet arrives at the proper treatment location in a safe manner.

Establishing a limited cadet ambulatory care service would allow some of the predicted inpatient workload to remain at the Academy. In turn, that would decrease leakage to either FT Carson or to the network and decrease the need for transporting cadets to the different facilities.

The costs to the Academy cannot be limited to just dollar signs. Other, even higher costs include strained relationships with each of the agencies, as well as the political weight behind each cadet. These benefits and drawbacks must also be considered. Expected benefits vary based on the chosen option but may include limited loss of training time, increased command and control of cadets, increased continuity of care, improved access to care, increased patient satisfaction, decreased need for transportation and decreased network leakage.

This BCA looked at the 10 MDG's current framework, FY 2006 and linked the business case analysis with business objective 2.A.1. This objective is to establish and execute a BRAC transition plan, which addresses scope of services, squadron make-up and structure, and phased implementation. The mission of the 10 MDG is to "provide combat, contingency, and community healthcare to our war fighters and their families – past, present and future". The vision is to be the "cornerstone for a premier integrated community healthcare system to ensure a fit, ready force in the Pikes Peak Region". In addition, the values are "Integrity first, service before self, excellence in all we do, and compassion for those who serve" (Anonymous, 2006).

A.1 Background

Based on Public Law 101-510, 10 U.S.C 2687, the USAFA hospital will provide ambulatory care services to its beneficiary population and will rely on civilian and military medical networks for inpatient services (BRAC, 2005). Academy cadets comprise 14% of the

total beneficiary population but provide unique issues inherent to the training mission and care of these congressionally appointed students (Admissions, 2006).

A starting point in evaluating how to manage cadet care was to examine other Service academies. West Point is unaffected by BRAC and will continue to manage Keller Army Community Hospital, a 65 bed facility. Keller has a 33 bed MSU, a three bed ICU, a six bed OB unit, an ambulatory surgical unit (ASU) and an ED (Community Health, 2006). The beneficiary population is estimated at 29,000 of which 4,000 are cadets (About the Academy, 2006).

Keller, which is located on West Point, also operates a cadet clinic that averages about 100 cadet visits a day. Specialty care referrals are made either to local civilian institutions or to Walter Reed (Keller, 2006). Walter Reed is also affected by BRAC. The plan is to move Walter Reed to Bethesda Naval Hospital and create the Walter Reed National Military Medical Center. The old Walter Reed is predicted to remain open for the next four to five years, and West Point cadets can continue to utilize services there until closed (Markel, 2005).

The Naval Academy serves 4200 to 4300 midshipmen a year and manages their care at the Naval Health clinic. There is a physician on call 24 hours a day, seven days a week. During non-duty hours a naval corpsman staffs the clinic. These corpsmen are the equivalent to the AF independent duty medical technician (IDMT). The Naval Academy possesses several memorandums of understanding (MOU) with local facilities that allow Navy orthopedists and podiatrists to perform surgeries downtown. The Naval Academy pays all fees except professional fees (P. Roark, personal communication, August, 31, 2006).

The Navy clinic has purchased four regular beds that are maintained in the dorms. Ill or post surgical midshipmen that do not require hospitalization, use these rooms. Midshipmen who have had surgery, most commonly orthopedic, also utilize these beds since the bunk beds used in

their regular dorm rooms are not a realistic option. These medical rooms have private baths. For meals, other midshipmen are responsible for bringing food to the ill or post surgical midshipmen. Medical personnel do not staff these rooms (P. Roark, personal communication, August, 31, 2006).

All other medical issues require transfer to a local facility or to Bethesda Naval Hospital, approximately 15 minutes away. Transportation is an issue here, too. The Naval Academy is looking into contracting this service. For now a duty driver, often an active duty member, drives the midshipmen to their appointments (P. Roark, personal communication, August, 31, 2006).

The Coast Guard Academy is similar to the Naval Academy in that there is only a clinic available with a physician, physician's assistant (PA) or IDMT equivalent on call. The Coast Guard Academy cares for 950 to 1000 cadets per year, the fewest of the service Academies. They do possess a ten-bed infirmary, which operates similar to the Naval Academy dorm rooms. These cadets are self-sufficient. They medicate themselves and do not require any form of nursing care. Any cadet requiring any nursing care, to include intravenous (IV) antibiotics, requires admission to a local civilian facility (A. Chaney, personal communication, August, 31, 2006).

The corpsmen on duty is at a minimum, first aid trained and many are emergency medical technician (EMT) certified. Some also have advanced cardiac life support training (ACLS). The corpsman acts as a triage point and monitors vital signs. He will call the on-call provider or 911 as appropriate for changes in the cadet's health. The Accreditation Association for Ambulatory Health Care (AAAHC) has certified the clinic and infirmary (A. Chaney, personal communication, August, 31, 2006).

The Coast Guard has a transportation issue but posses a current contract for shuttle services. This shuttle is mainly utilized to pick up post-surgical cadets (A. Chaney, personal communication, August, 31, 2006).

Currently the Academy most closely resembles West Point, but with BRAC that will no longer be true. While there is no one right way to manage the care of the cadets, the different service academies give examples of ways in which we may expand our ambulatory care services.

From September of 2005 through August of 2006, there were 150 total cadet admissions directly to USAFA (see Appendix A). This number does not include network care admissions; however, the average cost per cadet for network care was \$10,100 compared to an average direct care cost of \$3,097. The number one admission for network care was depressive neurosis and second was psychosis (M. Love, personal communication, September, 1, 2006). Neither FT Carson nor the Academy can recapture inpatient psychiatric admits (J. Paul, personal communication, September 29, 2006).

An analysis of the data shows that 41 of the 150 direct care admissions were under 24-hours. This population could potentially stay at the Academy with expanded ambulatory care services. Further discussion with the Col Steve DeCoud, Commander of the Cadet Clinic, indicated that there are also a number of social admits. In other words, cadets who really do not meet true inpatient admission criteria but were placed in the Academy hospital as a convenience for the cadet and the Academy. Criteria for this was any admission with a diagnosis of cellulitis without complications, simple pneumonia, esophagitis, otitis media or viral illness with less than a two day admission (S. DeCoud, personal communication, September 12, 2006). These admissions totaled another 23 cadets who could potentially remain at the Academy with expanded ambulatory care services (see Appendix B).

As stated earlier, the issue of defining a scope of care for ambulatory care services remains. According to Ross, Williams and Pavlock (1998) one universal and agreed upon definition for ambulatory care does not exist. Definitions vary based on the skill level of the practitioner, settings, and specialty. The American Heritage Stedman's Medical Dictionary (2004) defines ambulatory care as medical care provided to outpatients. Many other sources refer to ambulatory care as the lack of an overnight stay. Wikipedia (2006) defines ambulatory care as:

Any non-emergency medical care; usually the term refers to outpatient care. A large segment of medical conditions does not require hospital admission and can be managed by visiting the hospital for consultations and tests. Many forms of medical investigations can be performed on an ambulatory basis, including blood tests, X-rays, endoscopies, and even biopsy procedures of superficial organs.

AAAHC does not endorse one definition of ambulatory care. Many treatments and procedures are accomplished in the outpatient setting and the scope of care for a facility depends on the capabilities and specialties within that facility as well as the health of the patient. The Academy has a tremendous opportunity to think out of the box in regards to the care of this young and healthy population, to include ideas such as having cadets return to the clinic every 12 hours for IV antibiotic infusions, during clinic operation hours. The ambulatory scope of practice at the Academy is limited by AF regulations and BRAC mandates rather than AAAHC guidelines (S. Kaufman, personal communication, September 11, 2006). In other words, ambulatory care equates to anything that can be accomplished in an outpatient setting as long as the providers are qualified and the setting is appropriate. The 10 MDG must stay within the law of BRAC as well as comply with AFMS mandates.

BRAC (2005) mandated that the Academy will have no inpatient services. The AFMS stated that the 10 MDG will not be resourced for a 23-hour close observation unit (N. Waite, personal communication, September 1, 2006). This means that the expansion of cadet ambulatory cadet services is slightly limited. One option for the expansion of ambulatory care includes the utilization of ten additional IDMTs due to arrive at the 10 MDG per the program objective memorandum (POM) for FY 08 (R. Peltzer, personal communication, September 27, 2006). Establishing a structure similar to the Naval Academy, the AF Academy would utilize these IDMTs to cover expanded clinic hours (Monday – Friday 0700 – 1900) as well as non-duty hours of the cadet clinic. IDMTs would triage cadet medical issues and either treat within their scope, utilize the on-call physician, utilize the UCC or initiate the 911 emergency system.

The AF Academy would also incorporate the Naval Academy use of dorm rooms. These rooms would be set aside specifically for the observation and minor treatments of ill or post-surgical cadets. IDMTs on shift would monitor these cadets and provide minor services as ordered by the cadet clinic physician. The use of these rooms and the IDMTs would prevent less than 23-hour admissions, prevent “social” admissions, and provide a safe, monitored environment for the AF Cadets. These rooms would also provide a place for cadets to be discharged to that no longer require hospitalization but are still recovering from illness or surgery. While the early discharge of a cadet will not have any financial impacts, based on the diagnostic related group (DRG) payment system, it will allow the cadets to return to an academic setting that allows them to recover and still electronically tap into their studies. The utilization of dorm rooms has been approved by the 10 MDG Commander, the Commandant of Cadets, and the Superintendent (A. Berg, personal communication, September, 28, 2006).

Cadets face academic and athletic stressors of Academy life and every moment out of training can impact their performance. Having a cadet as an inpatient downtown or at FT Carson is not the same as having other beneficiaries there. Cadets must be tracked closely and the goal is to return them to training as soon as possible. Other institutions may not share this same sense of urgency. Keeping as many cadets as possible on the Academy campus will assist in meeting training needs.

In addition to loss of training time, transportation is another concern. How will a cadet who requires an inpatient admission, get to Memorial North or FT Carson from USAFA? Memorial North is 12.5 miles from the Cadet Clinic with a predicted driving time of 19 minutes (Map Quest, 20006). Memorial North is currently under construction and is predicted to be complete early in 2007. This facility will be able to accommodate up to 500 beds but will routinely manage 84 (Memorial North, 2006). One of the rumored reasons for building another hospital was in anticipation of BRAC and the loss of inpatient services at the Academy (N. Waite, personal communication, September 1, 2006). An item that needs to be considered is the community's expectations. These community relationships are important and must be maintained and cultivated so that future working relationships can be sustained. This could become important in dealing with issues such as Avian Flu, global war on terrorism, and local emergency response plans.

FT Carson is 28.4 miles with an estimated driving time of 43 minutes (Map Quest, 2006). There is a greater loss of training time with increased distance to care. The current USAFA hospital is only 1.8 miles with a driving time of five minutes (Map Quest, 2006). Base transportation services can be utilized for cadets to get to and from the 10 MDG but there is no

system which would transport cadets to Memorial North or FT Carson for unscheduled medical issues at this time.

Another concern is the cost of transportation. Currently, Ambulance Medical Response (AMR) provides transportation for the on base emergent situations and is not contracted for the delivery of cadets from the clinic to an off base inpatient facility. Cadets often utilize AMR for urgent care issues. A large concern is that once 911 is utilized, the ambulance is required to transport the cadet to the nearest ED and not the nearest UCC. This would result in cadets unnecessarily being seen downtown and would increase network leakage (A. Berg, personal communication, September 5, 2006). The existing AMR contract may not be sufficient to meet the change in requirements. A new contract may have to be established or the old contract revised.

An addition to the existing contract may be possible. AMR does offer non-emergency transportation (NET) services. These services include sophisticated call management, gate keeping, provider network management, scheduling and dispatching, data collection, and quality management. AMR currently offers NET to almost nine million customers (AMR, 2006). A NET contract could prove to be cost-efficient and allow the cadet to get to the proper point of entry based on the care needed. IDMTs can also serve as a gatekeeper to ensure proper utilization of either 911 or NET services.

The cost to TRICARE is not the only concern about cadets utilizing the network ED. Other issues include the overcrowding of EDs and the improper use of emergency resources. In the United States between 23% - 33% of 911 calls do not result in the transport to a local ED. Current regulations state that patients can only be left at the scene if they refuse transport (Snooks, Dale, Hartley-Sharpe, & Halter, 2003).

Emergency Medical Services' (EMS) 2002 strategic plan highlighted advanced life support (ALS) dispatch guidelines. The goal is to reduce unnecessary demand for ALS services, provide the appropriate level of care for the patient, and increase the capacity of current units to respond to actual ALS calls by decreasing the growth of non-ALS calls. One initiative specifically looked at alternate transport destination policies. Low-risk patients who require a minimal level of care could receive treatment at clinics or UCCs. The protocol is safe, cost-effective, and accepted as a standard of care by patients (EMS, 2006).

The Woodinville two- year project analyzed the results of transporting patients to a basic life support (BLS) level of care, specifically the Evergreen Urgent Care Clinic. The results indicated proper triage and transport of patients to the appropriate level of care. Patients were satisfied with the treatment received in an UCC setting and early data suggested that BLS units are back in service 50% faster then when transporting to an ED (EMS, 2006). The protocol has been incorporated into practice and something similar could be used for cadet transport. Plus, AF cadets have the added advantage of an on-site IDMT to assist with triage protocol.

BRAC initiatives create many opportunities and challenges for the military in general. However, BRAC will specifically influence military medicine (Wood, 2006). The BRAC's commission chairperson, Anthony Principi, states, "The worlds of national defense and of medicine are changing ever more rapidly and ever more profoundly, and just as chance favors the prepared mind, change favors the prepared organization" (Wood, 2005).

The 10 MDG is being downsized from a hospital with an ED to an outpatient clinic with an UCC and an ASU. Although, still unclear on how this will happen, who will be affected, and when this will occur, the executive staff must start preparing for the transition. Downsizing is not a new concept to the business of healthcare. The term downsizing is fraught with negativity

and anxiety and is often viewed as a knee-jerk reaction to a changing environment and pressures (Davis, Savage, Stewart, & Chapman, 2003).

Downsizing means many things and it is not just the loss of employees. It is the loss of positions, departments or product lines (Davis, et al, 2003). The 10 MDG will feel this loss in the form of employees, positions, realignment of positions to FT Carson, the loss of departments and product lines. The executive staff has a Herculean task as the 10 MDG prepares for their new mission.

Downsizing mainly occurs as a response to environmental changes. Population ecology theory states that in order for an organization to survive, the organization must adapt to environmental changes (Davis, et al, 2003). Healthcare organizations must be efficient in order to be competitive for managed care contracts, they have to respond to changes in Medicare and Medicaid programs, and they have to respond to changes in billing practices. Healthcare organizations must also respond to demographic and societal changes, the shift to outpatient care, and the growing need for geriatric long-term care (Woodard, Fottler, & Osborne-Kilpatrick, 1999). Population ecology suggests that if the organization wishes to survive, it will change. Downsizing is a way in which the organization can become more efficient (Davis, et al, 2003).

Another reason that downsizing is a popular way in which a healthcare organization can become more efficient based on institutional theory. This theory states that since other hospitals have used downsizing as a means to become more efficient, so will we. This theory states that healthcare organizations are simply imitating the actions of others without having any credible reason to do so. Executives may simply choose this route since the literature, professional organizations, and training programs suggest that it works (Davis, et al, 2003). But, how effective is downsizing?

The goals of downsizing are to eliminate waste, increase efficiency and productivity, increase profits, and become more competitive. However, there are potential risks associated with downsizing. These risks include a loss of corporate knowledge and expertise, a decrease in productivity, an increase in absenteeism, a decrease in morale, and a decrease in quality (Davis, et al, 2003).

Healthcare organizations are employing a number of techniques in order to become efficient and cost-effective. These include but are not limited to total quality management (TQM), process improvement (PI), job redesign, downsizing, and restructuring (Woodard, et al, 1999). Downsizing is not the only way in which an organization can achieve these goals; the MDG executive staff should employ a combination of techniques in order to best achieve desired results. Studies show a lack of conclusive evidence that shows any long-term benefits of downsizing (Davis, et al, 2003).

The literature revealed a three-phase program that should be used for strategic restructuring. The phases are 1) the planning phase, 2) the implementation phase, and 3) the evaluation and process continuation phase. The first phase includes vision, assessment, and target setting (Woodard, et al, 1999). This phase should be part of the overall strategic management of the healthcare organization. Sufficient planning ensures that downsizing decisions are congruent with organizational strategic goals and the restructuring process can be used to redefine the organization's focus (Davis, et al, 2003). The second phase is comprised of implementing Phase I plans and continuous quality improvement monitors. The last phase places an emphasis on further implementation and evaluation (Woodard et al, 1999).

One core theme throughout the process is communication. Woodard et al (1999) states that open communication is the key to successful change. Communication is not only important

to the 10 MDG but also to our patients. When the value of change is not evident or proven to either the staff or the patient, the change itself is at a higher risk for failure (Davis, et al, 2003). BRAC decisions are often not viewed as value added decisions. Communication must be ongoing, consistent, and presented in a number of ways. One facility undergoing restructuring communicated through a facility weekly newsletter, through the facility e-mail, through the mail, through pamphlets, through forums, and through town hall meetings. Over a two-year period, this facility held about 100 meetings with managers and another 75 meetings with executive staff. This did not include the meetings that were open to all employees and the community (Woodard, et al, 1999).

There are a number of lessons that can be learned from other healthcare organizations that have undergone change related to restructuring or downsizing. Phase I is extremely important and should be incorporated into the organization's strategic plan (Woodard, et al, 1999). A proactive approach is better than a reactionary one. A poor plan can result in broad cuts across the board. This action can severely damage an organization because often the most efficient units are usually the ones most damaged. These units or departments provide an organization with a competitive advantage and that advantage should be protected (Davis, et al, 2003). A strong, brief vision statement is also needed. This will provide direction and a goal for executive staff and employees (Woodard, et al, 1999).

Staff should be involved in the brainstorming process from initiation to completion. Many times employees will have the best suggestions for process improvement and they will increase efficiency. Involving the staff increases their sense of control and commitment to the change. Employees of Lehigh Valley Hospital and Health Network in Pennsylvania submitted

over 1,000 cost saving suggestions. These suggestions were projected to save the company over \$75 million in five years (Davis, et al, 2003).

Another lesson is taking care of all staff, those that will be affected by the downsizing and those that will remain. Emphasis is usually placed on staff that will be reduced. However; those left behind remain in an uncertain environment. One in which management is distrusted, job security is in question, and guilt is a normal feeling. Employees that loose jobs because of downsizing require support such as job fairs, fair compensation packages, and outplacement counseling. Staff left behind need to feel that decisions to remove employees were fair and equitable. Management needs to maintain employee trust throughout the entire restructuring process (Devine, Reay, Stainton, & Colins-Nakai, 2003). Part of downsizing needs to include a protection plan for the remaining staff. Issues such as morale and staff satisfaction need to be addressed. Those left behind or the survivors can become unmotivated and productivity can actually decrease. Keep staff involved in the rebuilding process and keep communication flowing (Davis, et al, 2003).

A.2 Subject of Case

This business case examines the likely benefits and costs to the 10 MDG resulting from the 2005 BRAC decision for the 10 MDG to evolve from an inpatient facility to an outpatient facility. The main options are utilization of FT Carson, utilization of FT Carson with expansion of cadet ambulatory care services, utilization of network care with admitting privileges for cadet physicians, or utilization of network care with admitting privileges for cadet physicians and expansion of cadet ambulatory care services. All options pose a transportation issue. The benefits and costs will follow from decision point to five years in the future. Realigning the capabilities of ambulatory services meets BRAC initiatives, the business objectives of the 10

MDG, and the mission of the 10 ABW.

A.3 Purpose of Case

This case is designed to provide members of the Executive Committee with the necessary financial projections, metrics, contingency assessments, and risks associated with each of four alternatives.

B. Methods and Assumptions

B.1 Scenarios and Data

The value of expected benefits and costs will be developed from a comparison of the four scenarios. Data will be obtained from the M2 database and the Integrated Clinical Database (ICDB) Version 1.4.0. The 10 MDG data analysis officer, Mr. Michael Love, assisted with the data pull.

B.2 Scope of the Case

Time

This business case covers a five-year period from October 2007 through October 2012.

The timing of cash outflows vary by scenario.

Organizations

The case includes expected business performance improvements primarily for the care of the USAFA cadets. Cost impacts for this analysis will span the following areas: human resources (staffing), contracting, logistics, and legal.

BRAC (2005) predicts a loss of 30 military positions and nine civilian positions at the 10 MDG. A number of positions maybe realigned at FT Carson (N. Waite, personal communication, September 1, 2006). Currently, the plan is to convert 26 active duty slots to

civilian slots. These civilian slots, plus funding will then be presented to FT Carson (A. Berg, personal communication, December, 4, 2006).

Technologies

Benefits and cost estimates are restricted to the impacts resulting from the redirection of cadet inpatient care and the expansion of cadet ambulatory services.

B.3 Financial Metrics

Cash flow estimates in dollars are based on a five-year estimate. Expected cash flows are summarized on standard format cash flow statements.

Cost Avoidance

This BCA focuses on avoiding network costs as well as excessive AMR costs. The option that produces the largest cost avoidance scenario is considered the most desirable. However, related to the special needs of the cadet population, cost avoidance figures will not be the only deciding factor. An inflation rate of 5% for costs was used based on the inflation rate utilized by the 10 MDG resource management office (R. Peltzer, personal communication, November, 28, 2006).

B.4 Benefits

1. The identified and analyzed benefits of expansion of cadet ambulatory care services include the following:

- Decreased leakage

By caring for as many cadets as possible within our ambulatory care setting, leakage to either Memorial North or FT Carson is decreased. This is a goal shared by the 10 ABW and the 10 MDG.

- Decreased costs

Maintaining cadets on campus results in decreased costs to Health Affairs and provides an overall savings for the medical budget. Decreasing the need for inpatient admissions decreases the need for transportation and decreases costs for the 10 MDG.

- Increased continuity of care

Keeping cadets within the 10 MDG facilitates communication and continuity of cadet care. The cadet's flight physician can monitor and treat the cadet throughout their entire illness.

- Limited loss of training time

Keeping cadets on base greatly reduces the amount of training time lost. Having dorm rooms set aside for ill and post surgical cadets facilitates an earlier return to campus. While on campus, cadets have electronic access to their studies. Preventing as many admissions as possible limits the loss of training time for cadets assigned to retrieve the patient after discharge.

- Increased satisfaction

Limiting the number of inpatient admissions, decreases the need to track and monitor the cadet while they are off campus. This satisfies the 10 ABW's goal of maintaining command and control of ill cadets. Parental expectations are also met by having personalized care for cadets who are ill but do not require hospitalization. IDMTs will offer close monitoring and some TLC for their sons and daughters. Cadet satisfaction is met by decreasing the stress of lost training time.

- Meets the intent of BRAC initiatives

The mandate sent down by the BRAC commission is to move the inpatient mission and rely on the utilization of military and civilian network care. Utilizing dorm rooms and expanding

cadet clinic hours increases the ability to offer outpatient treatments and close monitoring. These initiatives are in line with AAAHC guidelines and the clinic can be accredited.

- Modeled after other service academies

The AF academy would model this outpatient approach after the Naval and Coast Guard academies existing treatment plan for their cadets and midshipmen. This model has proven effective.

- Utilization of IDMTs

The POM 08 includes the manning of ten additional IDMTs. These individuals could be fully utilized by manning extended cadet clinic hours and rotating through a night shift schedule. IDMT skills will be used to monitor ill and post surgical cadets, as well as address any healthcare concerns of cadets during non-duty hours. IDMTs will also be available to triage cadets and assist them in acquiring the proper level of care, thus preventing unneeded use of the civilian ED and the 10 MDG UCC.

2. The identified and analyzed benefits of utilization of FT Carson include the following:

- Decreased leakage to the network

Utilization of FT Carson decreases leakage to the civilian medical network. This allows cadets to remain in a Department of Defense (DoD) medical system and prevents cadets from switching back and forth between military and civilian networks.

- Decreased costs

This option prevents increased network care costs, estimated at \$10,100 per network admission. This in turn prevents additional costs to the TRICARE budget and increases the allotted money for individual service use. FT Carson and possibly the 10 MDG, would benefit from the \$60 per RVU reimbursement.

- Improved patient continuity

Maintaining cadets in the same type of military medical setting facilitates a better understanding of the entire process. This includes providers, case managers, and cadets.

- Increased patient satisfaction

Patient satisfaction initially drops with any change; however, satisfaction increases by remaining in a military facility. The cadet is likely to perceive the military facility as having higher quality of care standards.

- Cadet exposure

Cadets are exposed to the concept of a joint military operation and are exposed to another service.

- Maintained quality of care

Maintaining quality of care is imperative. The 10 MDG is associated with quality care and it is imperative to maintain that reputation despite where the patient is physically located. Patient continuity and management will be higher between military networks and patient care needs can be rapidly met. Interdisciplinary communication will be stronger than between military and civilian networks. Depending on the plan for EACH, cadets may still be taken care of by AF providers.

- Set the example

A future direction for DoD medicine maybe a unified medical command. On September 6, 2006, the Defense Business Board (DBB) advised Defense Secretary Donald Rumsfeld to appoint a task force to pull together a unified medical command concept by January 1 (Putrich, 2006). The AF Academy and FT Carson could take the lead and establish a model working relationship. The merger process can be documented and serve as a benchmark for all of DoD.

Most of the literature speaks of the Walter Reed – Bethesda upcoming merger as well as the Wilford Hall – Brooke Army Medical Center (BAMC) impending merger. There is nothing that describes the actual process or lessons learned. This information would be valuable.

3. The identified and analyzed benefits of utilization of network care with admitting privileges include the following:

- Limited loss of training time

Memorial North is closer to USAFA than FT Carson is. Traffic patterns and construction offer a challenge with the commute to FT Carson and actual travel time varies based on the time of day. The commute is shortened and decreases the amount of time that the cadet transporting the discharged cadet is away from the campus.

- Decreased number of facilities involved

Memorial North is the closest ED to the 10 MDG and cadets will end up seen there for local emergencies not within the scope of the 10 MDG UCC or by virtue of activating the 911 system on base.

- Guaranteed business for Memorial North

Negotiate a MOU which would allow military providers to admit cadets at Memorial North. Memorial could charge all previously negotiated fees with TRICARE, with the exception of professional fees. With all other beneficiaries going to FT Carson, Memorial may be willing to enter into a viable agreement which could potentially include a transportation component.

- Stronger community relationships

Military and community environments greatly depend on each other in the event of epidemics, terrorist attacks, or national disasters. Utilization of the network for cadet care increases and solidifies these relationships.

B.5 Cost Impacts Under the Four Options

| | Costs | Option 1 FT Carson | Option 2 FT Carson w/ expansion | Option 3 Network | Option 4 Network w/ expansion |
|-----------|-----------------------|---|--|--------------------------------------|--------------------------------------|
| Resources | Transportation | Needed | Needed, but to a decreased amount | Needed | Needed, but to a decreased amount |
| | Personnel | | Addition of ten IDMTs | | Addition of ten IDMTs |
| | Full Service | Reimbursement per RVU to FT Carson only | Reimbursement per RVU to both facilities | Cost per DRG minus professional fees | Cost per DRG minus professional fees |

B.6 Major Assumptions

- Public Law 101-510, 10 U.S.C 2687 mandated the mission of the 10 MDG evolve from inpatient to outpatient only.
- Physical structure will not be manipulated.
- Transportation is an issue for all options.
- Cadets are 14% of the total beneficiary population.
- There is no recapture from other health insurance (OHI).
- Current provider templates are full and cannot be manipulated to increase patient load.
- BRAC mandates have not affected current outpatient clinic capacity.
- Network costs vary according to DRG code. An average cost of \$10,100 per network admission was used based on the average cost over the last four years.
- Inflation rate used was 5% for costs based on the inflation rate utilized by the 10 MDG resource management office.

- Maximum utilization of the UCC is possible with a limited amount of lost care to civilian EDs.
- The cadet clinic will extend service hours, as needed, to maximize number of cadets seen.
- IDMTs are utilized to expand cadet clinic capabilities and cover non-duty hours.
- A physician is on call during IDMT coverage times.
- FT Carson cannot recapture current network leakage.
- FT Carson can recapture 100% of USAFA current inpatient workload.
- Less than 23-hour admission capabilities remain constant.
- No additional funded staffing is required. POM 08 has increased the number of IDMTs assigned to the 10 MDG to ten.
- No additional equipment is required.
- No additional administrative staff is required.
- Beneficiary population will remain constant over the next five years.
- The standard fee for the USAFA AMR contract is considered a sunk cost and is not used in estimating cost per transport.
- Cadet 911 calls on base will result in direct transport to Memorial's ED and will be lost workload.
- All inpatient admissions will require transport to either FT Carson or Memorial North.
- Standard of care will be met with the expansion of cadet ambulatory care services.
- Accreditation from AAAHC will be obtained.

C. Business Impacts

C. 1. Overall Results

Expected total costs from the four scenarios to meet cadet inpatient demand are summarized in Table 1. The summary also illustrates expected cash losses based on amount of cadet inpatient care recaptured with the expansion of cadet ambulatory services. Costs were based on cadet direct care admissions from September 2005 to August 2006. 150 cadets were admitted to the 10 MDG during this time. Appendix A displays these admissions by DRG.

In brief, the analysis shows that the FT Carson option, with the expansion of cadet ambulatory care services provides the greatest cost avoidance. This case is a cost avoidance decision. The focus, financially, is on which option least impacts the budget. All scenarios were calculated over five years at a 5% inflation rate. Details on how costs were determined are explained in section C.3 – Costs.

All Memorial North options result in a larger expenditure, however, the Memorial North option with the expanded cadet ambulatory care service will avoid some DRG costs (see Table 2). This estimate only includes the expected DRG fees as calculated by the TRICARE DRG-Based Payment calculator. FY 2006 was used to establish baseline costs (TRICARE, 2006). Professional fees and specific procedure fees are not included. Further research is needed to establish an overall average fee per DRG that includes current procedural terminology (CPT) codes and professional fees. It would then be possible to determine the amount of professional fees that could be avoided if military physicians had admitting privileges to Memorial North.

Either of the FT Carson options is deemed less risky than the Memorial North options, since they do not involve long-term commitment contracts with a civilian facility. The Memorial North options also have the added risk of additional medical costs. If a cadet is admitted by an

AF physician, but then requires specific tests or procedures that could be accomplished at FT Carson, there would then be additional professional and procedural fees charged based on the specialty utilized. If the cadet were admitted to FT Carson, these additional fees would not exist.

C. 2. Benefits

This BCA looked at the 10 MDG's current framework, FY 2006 and linked the BCA with business objective 2.A.1. This objective is to establish and execute a BRAC transition plan, which addresses scope of services, squadron make-up and structure, and phased implementation. The expansion of cadet ambulatory services would meet BRAC guidance as well as fit into a USAFA transition plan.

Understandably, the issue of caring for the cadets in the BRAC environment has become a main focal point for the 10 MDG and the 10 ABW. A non-specific goal has been established to prevent as many cadet admissions as possible. The main reason for this is the loss of training time. Cadets that remain under medical care, but physically on base retain the ability to access classes and class work via laptops. Admission to Ft Carson and Memorial North would eliminate that ability.

While none of the options provide direct financial benefit to the 10 MDG, the option of expanding cadet ambulatory services does provide the ability to decrease the number of cadet admissions to FT Carson or Memorial North (see Table 1). The expansion of services meets both the intent of BRAC as well as addressing a 10 ABW concern to provide medical care to the cadets in the least disruptive way possible.

The FT Carson options provide the greatest overall cost avoidance and provide the least amount of negotiation and paperwork. Specifics for all beneficiary care and the transfer of AF positions to FT Carson still needs to be ironed out. However, these issues have to be addressed

whether or not cadets are sent there. Another non-financial benefit includes cadet exposure to another Service. This is imperative with the Services turning to more and more joint venture assignments.

One of the concerns was travel time to FT Carson as compared to Memorial North. AMR data shows that the average run time to FT Carson was one hour and 49 minutes. The average travel time to Memorial, which is 15 miles from base, was one hour and 40 minutes. Average run time to Memorial North was not calculated as it is currently under construction. It can be inferred from the data that the transport time to Memorial North should be slightly less than Memorial, but overall will not be a vast difference.

Memorial North could also provide some intangible benefits. If a MOU was established for admitting privileges for cadet physicians, then cadet continuity of care would increase. As continuity improves so will quality of care. The other benefit would be that cadet physicians are given opportunities to practice medicine in an inpatient setting and not just in a clinic. This is imperative for our overseas missions.

C. 3. Costs

The only major cost impact associated with the FT Carson options is transportation. AMR charges by the level of call as well as mileage traveled. There are three levels, a Level I call is considered a wheelchair run, or a basic transport, and neither basic life support (BLS) or advanced life support skills (ALS) are needed. The fee for a Level I call is \$58.69 plus \$5.13 per mile. A Level II run requires BLS and a Level III call requires ALS skills. Every Level II call costs \$364.23 plus \$11.80 per mile and every Level III call costs \$506.84 plus \$11.80 per mile (N. Kauhaahaa, personal communication, November, 28, 2006).

AMR calls from September 2005 to October 2006 were examined to determine cadet utilization of AMR. During this time period there were 218 cadet transports. Of the 218 calls, 215 were Level II calls, one was a Level I call, and two were Level III calls. For the purposes of obtaining potential added transport fees, all cadet admissions will be considered a Level II call, and the assumption is made that all cadet admissions will require transport to either FT Carson or Memorial North. Data were obtained directly from AMR headquarters in Colorado Springs, Mr. Scott McCune. Data were then compared to in-house AMR run sheets to determine the category of the individual requiring transport.

The average FT Carson run (28.4 miles) is expected to cost \$699 and a Memorial North call (12.5 miles) is expected to cost \$512. If all 150 cadets are transported to FT Carson, the cost is \$104,850 (see Table 1). Memorial would cost \$76,800 (see Table 2). AMR costs may or may not be a direct cost to the facility based on the category of the call. Runs categorized as a transport are directly charged to the 10 MDG. All other runs are charged to TRICARE. In general transports are patients that are already under medical care and need transfer to another level of care. An example is a cadet who is seen in the clinic but requires inpatient admission. However, there is no policy on how to categorize these calls. Depending on the stability of the cadet and skills needed for the transport, another cadet who requires inpatient admission could be categorized as a regular run (S. McCune, personal communication, October, 15, 2006). Since there is not a good way to predict the actual direct cost to the facility, all costs will be assumed as an overall AFMS loss.

Transportation costs in this BCA were limited to the existing AMR established service since only the cadet population was used. Establishing a separate transportation contract for just

the cadet population is not cost effective. However, the 10 MDG should consider looking at alternative transportation contracts that could benefit the entire enrolled population.

Major costs related to the Memorial North alternatives are DRG fees as well as transportation fees (see table 2). These fees do not include specific procedure fees or professional fees. In order to determine the amount of cost avoidance based on DRG fees, first the total DRG cost was calculated for all 150 cadet admissions using the TRICARE DRG-Based Payment calculator for FY 06 (TRICARE, 2006). Appendix A illustrates this.

The predicted total for DRG fees was \$464,622 for FY 06 (see Table 2). Parameters were then established to predict the potential number of cadet admissions that could be prevented based on the expansion of cadet ambulatory services. Two criteria were established; 1) length of stay (LOS) under 1.0, day and 2) LOS under 2.0 days for the following DRGs: 068, 069, 070, 090, 182, 183, 184, 277, 278 (see Appendix B). These parameters were agreed upon by the flight commander of the cadet clinic, Col Steve DeCoud (S. DeCoud, personal communication, September, 12, 2006).

Based on the established criteria there were 41 cadets who had a LOS under 24 hours and 23 cadets who had a LOS less than two days for the specified DRGs. If there was a 100% recapture of these 64 cadets, 42.7% of total cadet admissions could be treated in the expanded clinic. Since 100% recapture is not a realistic goal, especially the first year of implementation, a realistic target was determined. Cadet admits under 24 hours totaled 41; this is 27% of cadet total admissions. Twenty-seven percent of cadet recapturable admissions was then used as a most likely (ML) target or a recapture of 17 cadets. Best case (BC) and worst case (WC) recapture rates were then set off of the ML rate. BC scenario is 37% of cadet recapturable admissions or 24 cadets, and WC is 17% recapture or 11 cadets.

The next issue was to determine potential cost avoidance. A 27% recapture would not equate to a 27% recapture of DRG total costs. DRG costs were recalculated based on the average LOS and DRG for those cadets who met criteria (see Appendix B). The potential cost avoidance for 100% recapture of cadets meeting criteria is \$145,734. Because it is not known which cadets would be recaptured based on DRG, 27% of \$145,734 was used as an estimate of cost avoidance for the ML scenario.

In summary, the FT Carson ML option with the expansion of cadet ambulatory services offers a savings of \$400,403 FY 06 as compared to the Memorial North ML option with expansion. If there is no expansion of cadet ambulatory services, FT Carson offers a cost savings of \$436,572 FY 06 as compared to Memorial North (see Table 1).

D. Sensitivities, Risks, and Contingencies

In developing the cost model and benefits rationale, two key input variables were identified which will have a strong influence on projected results. These variables are (1) amount of care recaptured with the expansion of cadet ambulatory services, and (2) transportation requirements. Cash flow estimates for each alternative will be based on the value projected to be ML for each of these variables. The two variables are not independent of each other in these scenarios. The workload recaptured and transportation required was kept at a constant. Values for each variable will be entered into the model representing the WC, the ML case, and the BC scenario. The resulting costs for each alternative will then be recorded (see Table 1).

The variable that has the greatest influence on cost savings is the actual DRGs recaptured. As illustrated in Appendix B, DRG 063 is the most expensive, while DRG 183 is the

most diagnosed. Targeting recapture on these specific DRGs would increase the amount of cost avoided. Table 3, illustrates the sensitivity of the actual DRGs recaptured.

Manipulation of the DRGs recaptured also changes the number of transports required. Table 4 illustrates the changes in AMR fees when the number of cadets recaptured changes. Table 5 shows the overall costs of recaptured DRGs. A comparison of Table 1 and Table 5 demonstrates that only the Memorial North BC scenario has a greater cost savings than the over \$3,000 DRG scenario.

Potential recommendations for successful implementation of an option will help ensure the realization of the business objective that provided the motivation for this proposal:

- Initiate formal discussions within the 10 MDG to include key internal players such as the 10 MDG commander and deputy commander, the 10 MDG aerospace medical squadron (AMDS) commander, the 10 MDG administrator, medical logistics, contracting and legal.
- Conduct a thorough strengths, weaknesses, opportunities and threats (SWOT) analysis.
- Initiate formal discussions with external agencies to include Memorial North, FT Carson, AMR, and TRIWEST.
- Write position descriptions and solicit competitive bids through contracting for transportation services from the local community for the entire beneficiary population. This contract should include an escape clause.
- Provide weekly updates to the 10 MDG executive staff as well as monthly updates during 10 ABW stand-ups.
- Write articles for cadet newspapers informing them on the expansion and what this means to them.

- Track monthly volume of admissions and determine if cadets were seen at the appropriate level of care. Address specific issues with individual physicians.
- Initiate aggressive educational classes for cadet physicians and IDMTs on the scope of care offered in the expanded ambulatory services.
- Educate cadets and their parents on the scope of care and purpose of the expanded services.
- Work directly with AMR to establish new protocol that would include IDMT input and transport to the UCC for cadets who call 911 and do not require an ED visit.
- Inform cadets of the process to obtain medical care. This may mean contacting the IDMT on shift prior to calling AMR.
- Hold cadets accountable for not obtaining medical care in the directed manner.
- Work on a new transportation contract that would benefit the cadet command as well as the medical group. This should be a cost-sharing agreement.
- Network with FT Carson's IT department and work to establish some sort of cadet internet connectivity.
- Educate physicians on recapturing DRGs that are the most expensive as well as the most diagnosed.
- Develop clinical pathways to target specific DRG recapture.

E. Recommendations and Conclusions

Based on the proceeding analysis of the 10 MDG BCA, it is recommended to expand cadet ambulatory services and utilize FT Carson for cadet inpatient needs. This assumes that FT Carson can accommodate the entire USAFA inpatient mission. This option provides the greatest overall cost savings in the shortest amount of time. There is also the potential to save even more

than predicted in the long run based on aggressive use of cadet ambulatory services as well as the potential to decrease transport costs by contracting with another service. Another benefit is cadet exposure to the Army. Joint training, joint deployment, and joint utilization of resources are the future of the DoD. AF cadets would gain some of this exposure. Cadets remain in a military setting and FT Carson's medical staff can be educated on special cadet needs such as early discharge to cadet clinic with expanded services and medical board issues. Work with FT Carson's IT department to establish cadet connectivity to their class work.

Transport time to FT Carson does not differ greatly than to Memorial. A cadet wing specific issue will be the return of the cadet back to the Academy. This will be an issue no matter where care is received. The wing and the medical group could cost share a transportation contract that would include taking the cadet to the inpatient facility and returning them. Overall a second transport contract could decrease costs to the 10 MDG.

Using the ML scenario under the FT Carson option with expansion of cadet ambulatory services, there is a cumulative cost savings of \$2,323,107 over the first five years as compared to the Memorial North ML case scenario with expansion. This analysis was a conservative estimate, capturing 27% of cadet recapturable admissions. The recapture rate is predicted to increase as physician knowledge and exposure of the expanded ambulatory service increases.

The FT Carson with expansion option will strengthen the 10 MDG's ability to meet both their business objective for BRAC as well as meet the goal of the 10 ABW. The recommended course of action is to utilize FT Carson and aggressively expand cadet outpatient capabilities. Although there were many assumptions, this option contains the greatest overall value when both financial and non-financial benefits are considered.

It is further recommended that an additional BCA is accomplished to compare potential costs of the current cadet direct care inpatient workload to all other beneficiary direct care inpatient workload. This BCA would provide valuable information in determining which population would provide the greatest cost avoidance in the event that FT Carson can only recapture a portion of the 10 MDG's current inpatient workload. In this event, it may prove cost effective to allow cadets admission to Memorial North, with AF physician admitting privileges, while keeping all other beneficiary categories at FT Carson.

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Table 1

Table of Costs

| Options | Cadet Admits | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
| FT Carson | | | | | | | |
| No Expansion – | 150 | (\$104,850) | (\$110,093) | (\$115,598) | (\$121,378) | (\$127,447) | (\$133,819) |
| WC – | 139 | (\$97,161) | (\$102,019) | (\$107,120) | (\$112,476) | (\$118,100) | (\$124,005) |
| ML – | 133 | (\$92,967) | (\$97,615) | (\$102,496) | (\$107,621) | (\$113,002) | (\$118,652) |
| BC – | 126 | (\$88,074) | (\$92,478) | (\$97,102) | (\$101,957) | (\$107,055) | (\$112,408) |
| Memorial North | | | | | | | |
| No Expansion – | 150 | (\$541,422) | (\$568,493) | (\$596,918) | (\$626,764) | (\$658,102) | (\$691,008) |
| WC – | 139 | (\$511,015) | (\$536,565) | (\$563,393) | (\$591,563) | (\$621,141) | (\$652,198) |
| ML – | 133 | (\$493,370) | (\$518,039) | (\$543,941) | (\$571,138) | (\$599,695) | (\$629,680) |
| BC – | 126 | (\$475,212) | (\$498,973) | (\$523,922) | (\$550,118) | (\$577,624) | (\$606,505) |

Note. Explanation of how figures were obtained is in section C.3

Table 2

Memorial North DRG and AMR Costs

| Options | Cadet Admits | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
| AMR Costs | | | | | | | |
| No Expansion – | 150 | (\$76,800) | (\$80,640) | (\$84,672) | (\$88,906) | (\$93,351) | (\$98,019) |
| WC – | 139 | (\$71,168) | (\$74,726) | (\$78,462) | (\$82,385) | (\$86,504) | (\$90,829) |
| ML – | 133 | (\$68,096) | (\$71,501) | (\$75,076) | (\$78,830) | (\$82,772) | (\$86,911) |
| BC – | 126 | (\$64,512) | (\$67,738) | (\$71,125) | (\$74,681) | (\$78,415) | (\$82,336) |
| DRG Costs | | | | | | | |
| No Expansion – | 150 | (\$464,622) | (\$487,853) | (\$512,246) | (\$537,858) | (\$564,751) | (\$592,989) |
| WC – | 139 | (\$439,847) | (\$461,839) | (\$484,931) | (\$509,178) | (\$534,637) | (\$561,369) |
| ML – | 133 | (\$425,274) | (\$446,538) | (\$468,865) | (\$492,308) | (\$516,923) | (\$542,769) |
| BC – | 126 | (\$410,700) | (\$431,235) | (\$452,797) | (\$475,437) | (\$499,209) | (\$524,169) |

Note. Explanation of how figures were obtained is in section C.3.

Table 3

| <i>DRG Cost Sensitivity – Memorial North</i> | | | | | | |
|---|--------------|-------------|--------------|-------------|-------------|-------------|
| Recaptured DRGs | Cadet Admits | 2006 | 2007 | 2008 | 2009 | 2010 |
| DRGs > \$3,000 | 138 | (\$420,610) | (\$4411,640) | (\$463,722) | (\$486,908) | (\$511,253) |
| DRGs with four or more admits | 125 | (\$401,698) | (\$421,783) | (\$442,872) | (\$465,015) | (\$488,266) |
| Combination of most admits and most expensive DRGs ^a | 130 | (\$390,104) | (\$409,609) | (\$430,090) | (\$451,594) | (\$474,174) |

^aDRGs used were 063, 090, 182, 183, 184, and 445.

Table 4

AMR Costs with Specific DRGs recaptured – Memorial North

| Recaptured DRGs | Cadet Admits | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|--------------|------------|------------|------------|------------|------------|------------|
| DRGs > \$3,000 | 138 | (\$70,656) | (\$74,189) | (\$77,898) | (\$81,792) | (\$85,882) | (\$90,176) |
| DRGs with four or more admits | 125 | (\$64,000) | (\$67,200) | (\$70,560) | (\$74,088) | (\$77,792) | (\$81,682) |
| Combination of most admits and most expensive DRGs ^a | 130 | (\$61,440) | (\$64,512) | (\$67,738) | (\$71,125) | (\$74,681) | (\$78,415) |

^aDRGs used were 063, 090, 182, 183, 184, and 445.

Table 5

Overall costs with specific DRGs recaptured-Memorial North

| Recaptured DRGs | Cadet Admits | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
| DRGs > \$3,000 | 138 | (\$491,266) | (\$515,829) | (\$541,620) | (\$568,701) | (\$597,135) | (\$626,992) |
| DRGs with four or more admits | 125 | (\$465,698) | (\$488,983) | (\$513,432) | (\$539,104) | (\$566,058) | (\$594,362) |
| Combination of most admits and most expensive DRGs ^a | 130 | (\$451,544) | (\$474,121) | (\$497,828) | (\$522,719) | (\$548,855) | (\$576,298) |

^aDRGs used were 063, 090, 182, 183, 184, and 445.

Appendix A

Total Cadet USAFA Admits - September 2005 – August 2006

| DRG | Diagnosis Related Group | Avg LOS | Cases | Avg fee/case | Avg total fee |
|-----|---|---------|-------|--------------|---------------|
| 021 | VIRAL MENINGITIS | 4.52 | 1 | 2,797 | 2,797 |
| 023 | NONTRAUMATIC STUPOR & COMA | 1.62 | 2 | 2,649 | 5,298. |
| 025 | SEIZURE & HEADACHE AGE >17 W/O CC | 2.22 | 2 | 2,707 | 5,414. |
| 032 | CONCUSSION AGE >17 W/O CC | 2.44 | 3 | 2,648 | 7,944. |
| 043 | HYPHEMA | 1.94 | 1 | 2,808 | 2,808 |
| 046 | OTHER DISORDERS OF THE EYE AGE >17 W CC | 2.68 | 1 | 3,186 | 3,186 |
| 047 | OTHER DISORDERS OF THE EYE AGE >17 W/O CC | 1.46 | 1 | 2,125 | 2,125 |
| 057 | T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, | 1.65 | 4 | 2,907 | 11,628 |
| 063 | OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES | 1.69 | 8 | 5,838 | 46,704 |
| 065 | DYSEQUILIBRIUM | 4.59 | 1 | 2,703 | 2,703 |
| 068 | OTITIS MEDIA & URI AGE >17 W CC | 0.92 | 1 | 1,574 | 1,574 |
| 069 | OTITIS MEDIA & URI AGE >17 W/O CC | 2.89 | 5 | 1,643 | 8,215 |
| 070 | OTITIS MEDIA & URI AGE 0-17 | 1.21 | 2 | 1,431 | 2,862 |
| 078 | PULMONARY EMBOLISM | 2.51 | 4 | 4,819 | 19,276 |
| 087 | PULMONARY EDEMA & RESPIRATORY FAILURE | 0.53 | 1 | 1,068 | 1,068 |
| 090 | SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC | 2.56 | 12 | 2,688 | 32,256 |

| DRG | Diagnosis Related Group | Avg LOS | Cases | Avg fee/case | Avg total fee |
|-----|--|---------|-------|--------------|---------------|
| 095 | PNEUMOTHORAX W/O CC | 3.05 | 3 | 2,087 | 6,261 |
| 142 | SYNCOPE & COLLAPSE W/O CC | 2.54 | 1 | 2,770 | 2,770 |
| 143 | CHEST PAIN | 1.99 | 1 | 2,405 | 2,405 |
| 164 | APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC | 6.03 | 1 | 7,568 | 7,568 |
| 166 | APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC | 10.57 | 1 | 5,508 | 5,508 |
| 167 | APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC | 1.11 | 5 | 3,834 | 19,170 |
| 182 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W | 2.00 | 5 | 3,396 | 16,980 |
| 183 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W | 1.32 | 18 | 2,656 | 47,808 |
| 184 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE 0-17 | 1.23 | 3 | 1,430 | 4,290 |
| 185 | DENTAL & ORAL DIS EXCEPT EXTRACTIONS & RESTORATIONS, AGE | 3.95 | 1 | 3,600 | 3,600 |
| 189 | OTHER DIGESTIVE SYSTEM DIAGNOSES AGE >17 W/O CC | 9.64 | 2 | 2,661 | 5,322 |
| 219 | LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE >17 | 1.91 | 2 | 5,495 | 10,990 |
| 224 | SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O | 2.09 | 2 | 4,117 | 8,234 |
| 227 | SOFT TISSUE PROCEDURES W/O CC | 0.89 | 1 | 2,786.00 | 2,786.00 |
| 234 | OTHER MUSCULOSKELET SYs & CONN TISS O.R. PROC W/O CC | 0.86 | 2 | 3,398.00 | 6,796.00 |
| 243 | MEDICAL BACK PROBLEMS | 11.43 | 4 | 2,920.00 | 11,680.00 |
| 248 | TENDONITIS, MYOSITIS & BURSITIS | 3.58 | 2 | 3,326.00 | 6,652.00 |
| 251 | FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE >17 W/O | 6.77 | 2 | 1,916.00 | 3,832.00 |

| DRG | Diagnosis Related Group | Avg LOS | Cases | Avg fee/case | Avg total fee |
|-----|--|---------|-------|--------------|---------------|
| 254 | FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE >17 W/O CC | 1.01 | 1 | 1,953.00 | 1,953.00 |
| 256 | OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES | 0.70 | 1 | 1,256.00 | 1,256.00 |
| 277 | CELLULITIS AGE >17 W CC | 2.57 | 2 | 3,847.00 | 7,694.00 |
| 278 | CELLULITIS AGE >17 W/O CC | 2.40 | 5 | 2,281.00 | 11,405.00 |
| 281 | TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE >17 W/O CC | 1.55 | 2 | 1,965.00 | 3,930.00 |
| 297 | NUTRITIONAL & MISC METABOLIC DISORDERS AGE >17 W/O CC | 1.10 | 5 | 2,099.00 | 10,495.00 |
| 324 | URINARY STONES W/O CC | 0.97 | 2 | 2,100.00 | 4,200.00 |
| 339 | TESTES PROCEDURES, NON-MALIGNANCY AGE >17 | 1.11 | 1 | 3,346.00 | 3,346.00 |
| 421 | VIRAL ILLNESS AGE >17 | 2.75 | 2 | 2,913.00 | 5,826.00 |
| 422 | VIRAL ILLNESS & FEVER OF UNKNOWN ORIGIN AGE 0-17 | 5.29 | 2 | 1,440.00 | 2,880.00 |
| 423 | OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES | 1.63 | 3 | 6,335.00 | 19,005.00 |
| 425 | ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION | 0.56 | 2 | 625.00 | 1,250.00 |
| 445 | TRAUMATIC INJURY AGE >17 W/O CC | 0.55 | 4 | 1,218.00 | 4,872.00 |
| 449 | POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W CC | 0.77 | 2 | 1,850.00 | 3,700.00 |
| 453 | COMPLICATIONS OF TREATMENT W/O CC | 1.99 | 2 | 2,204.00 | 4,408.00 |
| 463 | SIGNS & SYMPTOMS W CC | 0.45 | 1 | 713.00 | 713.00 |
| 498 | SPINAL FUSION EXCEPT CERVICAL W/O CC | 15.04 | 1 | 15,789.00 | 15,789.00 |
| 503 | KNEE PROCEDURES W/O PDX OF INFECTION | 1.82 | 5 | 5,687.00 | 28,435.00 |
| 538 | LOCAL EXCISION & REMOVAL OF INT FIX DEVICES EXCEPT HIP & | 10.90 | 1 | 4,837.00 | 4,837.00 |

| DRG | Diagnosis Related Group | Avg LOS | Cases | Avg fee/case | | Avg total fee |
|-----|--|---------|-------|--------------|--------|---------------|
| | | | | 1 | 118.00 | |
| 901 | ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THER | 0.24 | 1 | 118.00 | 118.00 | |
| | Total | | 150 | | | \$464,622.00 |

Appendix B

Potential Recapturable Cadet Admissions September 2005 – August 2006

| DRG | Diagnosis Related Group | LOS | Cases | Avg fee/case | Avg Total fee |
|-----|--|------|-------|--------------|---------------|
| 032 | CONCUSSION AGE >17 W/O CC | 0.77 | 2 | 2,399 | 4,798 |
| 057 | T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, | 0.93 | 2 | 2,907 | 5,814 |
| 063 | OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES | 0.94 | 1 | 4,772 | 4,772 |
| 068 | OTITIS MEDIA & URI AGE >17 W CC | 0.92 | 1 | 1,574 | 1,574 |
| 069 | OTITIS MEDIA & URI AGE >17 W/O CC | 1.61 | 3 | 1,643 | 4,929 |
| 070 | OTITIS MEDIA & URI AGE 0-17 | 1.21 | 2 | 431 | 2,862 |
| 087 | PULMONARY EDEMA & RESPIRATORY FAILURE | 0.53 | 1 | 1,068 | 1,068 |
| 090 | SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC | 1.69 | 5 | 2,688 | 13,440 |
| 167 | APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC | 0.80 | 2 | 3,608 | 7,216 |
| 182 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W | 1.32 | 3 | 3,396 | 10,188 |
| 183 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W | 1.03 | 15 | 2,656 | 39,840 |
| 184 | ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE 0-17 | 0.59 | 2 | 703 | 1,406 |
| 227 | SOFT TISSUE PROCEDURES W/O CC | 0.89 | 1 | 2,786 | 2,786 |
| 234 | OTHER MUSCULOSKELELET SYS & CONN TISS O.R. PROC W/O CC | 0.86 | 2 | 3,398 | 6,796 |
| 256 | OTHER MUSCULOSKELELET SYSTEM & CONNECTIVE TISSUE DIAGNOSES | 0.70 | 1 | 1,258 | 1,258 |
| 277 | CELLULITIS AGE >17 W CC | 1.36 | 1 | 3,847 | 3,847 |

| DRG | Diagnosis Related Group | LOS | Cases | Avg fee/case | Avg Total fee |
|-----|--|------|-------|--------------|---------------|
| 278 | CELLULITIS AGE >17 W/O CC | 1.86 | 2 | 2,281 | 4,562 |
| 281 | TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE >17 W/O CC | 0.52 | 1 | 1,277 | 1,277 |
| 297 | NUTRITIONAL & MISC METABOLIC DISORDERS AGE >17 W/O CC | 0.69 | 2 | 935 | 1,870 |
| 324 | URINARY STONES W/O CC | 0.84 | 1 | 1,986 | 1,986 |
| 421 | VIRAL ILLNESS AGE >17 | 1.62 | 1 | 2,913 | 2,913 |
| 425 | ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION | 0.60 | 2 | 670 | 1,340 |
| 445 | TRAUMATIC INJURY AGE >17 W/O CC | 0.55 | 4 | 1,218 | 4,872 |
| 449 | POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W CC | 0.44 | 1 | 1,057 | 1,057 |
| 453 | COMPLICATIONS OF TREATMENT W/O CC | 0.73 | 1 | 1,238 | 1,238 |
| 463 | SIGNS & SYMPTOMS W CC | 0.45 | 1 | 714 | 714 |
| 503 | KNEE PROCEDURES W/O PDX OF INFECTION | 0.82 | 3 | 3,731 | 11,193 |
| 901 | ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THER | 0.24 | 1 | 118 | 118 |
| | Total | | 64 | | 145,734 |